عنوان مقاله:

Prediction of Ventricular Tachyarrhythmias Using Fourier-Bessel Expansion in Short-term HRV Signals Obtained from ICDs

محل انتشار:

یازدهمین کنفرانس سراسری سیستم های هوشمند (سال: 1391)

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خلاصه مقاله:

Annually, many people die by cardiac murderous arrhythmias. Most of deathly arrhythmias happen in ventricle. Ventricular tachycardia (VT) and ventricular fibrillation (VF) are the most common symptom causing to sudden cardiac death (SCD) especially in the patient with the history of heart disease. Many studies have been carried out to predict VT-VF so to prevent SCD. Implantable cardioverter defibrillators (ICDs) are one of the recent developed devices used to send electrical shock to prevent SCD. In this paper, a novel method based on output of ICD (called heart rate variability (HRV)), is proposed to predict VT and VF. Considering the amount of noise in HRV signals, ectopic beats were firstly removed using median filter and wavelet transform. Considered features based on Fourier-Bessel expansion have been extracted to use for prediction with support vector machine. The results obtained 93% accuracy, 93% sensitivity and 92% specificity through the constructed model. This reveals improvement and efficiency in detecting VT-VF compared to what has been done before

کلمات کلیدی:

Heart rate variability, implantable cardioverter defibrillators, sudden cardiac death, ventricular tachyarrhythmias, Fourier-Bessel expansion

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